

**BIOGRAPHICAL DATA**

**Name:** James Everett Deacon

**Present Position** Distinguished Professor Emeritus  
Departments of Environmental Studies and  
Biology  
University of Nevada Las Vegas  
4505 Maryland Parkway  
Las Vegas, NV 89154-4030

**Home Address:** 968 Camelia Drive  
Henderson, NV 89015  
702-568-6720

**Office Phone:** (702)739-3275

**Birthdate:** May 18, 1934

**Birthplace:** White, South Dakota

**Degrees:** B. S. Midwestern University  
Wichita Falls, Texas, 1956  
  
Ph.D. University of Kansas, Lawrence, 1960

**Publications:**

1. Cross, F., J.E. Deacon and C. Ward. 1959. Growth data on sport fishes in Twelve Lakes in Kansas. Trans. Kansas Academy of Science, 62(2):162-164.
2. Minckley, W.L. and J.E. Deacon. 1959. New distributional records for three species of Kansas crayfish. Trans. Kansas Academy of Science, 26(2):165.
3. Minckley, W.L. and J.E. Deacon. 1959. Biology of the flathead catfish in Kansas. Trans. Am. Fish. Soc., 88:344-355.
4. Deacon, J.E. and A.L. Metcalf. 1961. Fishes of the Wakarusa River, Kansas. Univ. of Kansas Publ., Mus. Nat. Hist., 13(6):309-322.
5. Deacon, J.E. 1961. A new staining method for marking large numbers of small fish. Prog. Fish Cult., 21(1):41-42.
6. Deacon, J.E. 1961. Fish populations following drought in the Neosho and Marais des Cygnes Rivers of Kansas. Univ. of Kansas Publ., Mus. Nat. Hist., 13(9):359-427.
7. Deacon, J.E. and W.G. Bradley. 1962. Record of the spotted bat from southern Nevada. Journal of Mammalogy, 43(3):359-

**EXHIBIT**

tabbies

3021

427.

8. Deacon, J.E. and W.L. Haskell. 1963. Occurrence of the freshwater jellyfish, *Craspedacusta sowerbyi* in Lake Mead, Nevada. Amer. Midland Natur., 70(2):504.
9. Deacon, J.E., C. Hubbs and B. Zahuranec. 1964. Some effects of introduced fishes on the native fish fauna of southern Nevada. Copeia 1964, (2):384-388.
10. Hubbs, C. and J.E. Deacon. 1964. Additional introductions of tropical fishes into southern Nevada. Southwestern Naturalist, 9(4):249-251.
11. Deacon, J.E., W.G. Bradley and K. Larsen. 1964. Ecological distribution of the mammals of Clark Canyon, Charleston Mountains, Nevada. Jour. Mammalogy, 45(3):397-409.
12. Deacon, J.E., W.G. Bradley and K. Moor. 1966. Habitat of the lizard, *Xantusia vigilis*, in southern Nevada. Southwestern Naturalist, 11(1):126-128.
13. Wilson, B.L., J.E. Deacon and W.G. Bradley. 1966. Parasites of fishes of the Moapa River. Trans. of the Calif.-Nev. section of the wildlife society. pp. 12-23.
14. W.G. Bradley and J.E. Deacon. 1966. Amphibian and reptile records from southern Nevada. Southwestern Naturalist, 11(1):132-134.
15. W.G. Bradley and J.E. Deacon. 1967. The biotic communities of southern Nevada. In: Quaternary History of Tule Springs, Nevada. Nevada State Anthropological Papers, 13:201-295.
16. Deacon, J.E. and B.L. Wilson. 1967. Daily activity cycles of *Crenichthys baileyi*, a fish endemic to Nevada. Southwestern Naturalist, 12(1):31-44.
17. Deacon, J.E. and W.L. Haskell. 1967. Observations on the ecology of the freshwater jellyfish in Lake Mead, Nevada. American Midland Naturalist, 78(1):156-166.
18. Deacon, J.E. 1968. Endangered non-game fishes of the west: causes, prospects and importance. Proc. Western Assoc. of State Fish and Game Commissioners, 1968:534-549.
19. Minckley, W.L. and J.E. Deacon. 1968. Southwestern fishes and the enigma of endangered species. Science, 159:1424-1432.
20. Deacon, J.E. 1969. Nevada's endangered species: The Pupfish. Nevada Outdoors, 3(3):18-19.
21. Deacon, J.E. and S. Bunnell. 1970. Man and pupfish. Cry California, 5(2):14-21.

22. Espinosa, Jr. F.A., J.E. Deacon and A. Simmons. 1970. An economic and biostatistical analysis of the bait fish industry in the lower Colorado River. Spec. Publ. Univ. Nev., Las Vegas, 1-87.
23. Espinosa, Jr. F.A. and J.E. Deacon. 1971. Comparative angler success at Lake Mead (Arizona-Nevada). Prog. Fish Culturist, 33(3):170-174.
24. Deacon, J.E. and W.G. Bradley. 1972. Ecological distribution of fishes of Moapa River in Clark County, Nevada. Trans. Am. Fish Soc., 101(3):408-419.
25. LaBounty, J.F. and J.E. Deacon. 1972. *Cyprinodon milleri*, a new species of pupfish (family *Cyprinodontidae*) from Death Valley, California. Copeia, 1972 (4):769-780.
26. Koenig, E.R., R.W. Tew and J.E. Deacon. 1972. Phytoplankton successions and lake dynamics in Las Vegas Bay, Lake Mead, Nevada. Jour. Ariz.-Nev. Acad. Sci., 7:109-112.
27. Miller, R.R. and J.E. Deacon. 1973. New localities of the rare Warm Springs pupfish, (*Cyprinodon nevadensis pectoralis*), from Ash Meadows, Nevada. Copeia, 1973(1):137-140.
28. Rinne, W.E. and J.E. Deacon. 1973. Fluorescent pigment and immersion stain marking techniques for *Lepidomeda mollispinis* and *Cyprinodon nevadensis*. Trans. Amer. Fish. Soc., 102(2):459-462.
29. Espinosa, Jr. F.A. and J.E. Deacon. 1973. Preference of largemouth bass, *Micropterus salmoides* (Lacepede) for selected bait species under experimental conditions. Trans. Amer. Fish. Soc., 102(2):355-362.
30. Sharpe, F.P., H.R. Guenther and J.E. Deacon. 1973. Endangered desert pupfish at Hoover Dam. Reclamation Era, 59(2):24-29.
31. Minckley, C.O. and J.E. Deacon. 1973. Observations on the reproductive cycle of *Cyprinodon diabolis* (Wales, 1930). Copeia, 1973(4):610-613.
32. Deacon, J.E. and W.L. Minckley. 1974. Desert Fishes. pp. 385-488. In: Desert Biology, Vol. II (G. W. Brown, ed.) Academic Press, New York.
33. Deacon, J.E. 1974. Review, hydrographic history and relict fishes of the north central Great Basin, by Carl L. Hubbs, Robert R. Miller and Laura C. Hubbs. Copeia, 1974(3):809-811.

34. Minckley, C.O. and J.E. Deacon. 1975. Foods of the Devil's Hole pupfish, *Cyprinodon diabolis* Wales Cyprinodontidae. The Southwestern Naturalist, 20:105-111.
35. Tew, R.W., S.S. Egdorf and J.E. Deacon. 1976. Distribution of stream pollution in lake water. J. Water Pollution Control, 48(5):867-871.
36. Espinosa, Jr., F.A. and J.E. Deacon. 1979. Rearing bait fishes in the desert southwest. Nev. Fish and Game Dept. 29 pp.
37. Deacon, J.E. and M.S. Deacon. 1979. Research on endangered fishes in the national parks with special emphasis on the Devil's Hole pupfish. pp. 9-19 In: R. Linn (ed.). Proceedings of the first conference on scientific research in the National Parks. U.S. National Park Service Transactions and Proceedings, No. 5.
38. Deacon, J.E., G. Kobetich, J.D. Williams and S. Contreras. 1979. Fishes of North America: endangered, threatened or of special concern, 1979. Fisheries 4(2):29-44.
39. Paulson, L.J., J.R. Baker and J.E. Deacon. 1979. Potential use of hydroelectric facilities for manipulating the fertility of Lake Mead. pp. 296-300 in Swanson, G. A., Tech. Coordinator. The mitigation symposium: A national workshop on mitigating losses of fish and wildlife habitats. General technical report Am-65. Rocky Mtn. Forest and Range Exp. Sta., Fort Collins, Colorado.
40. Deacon, J.E. 1979. Endangered and threatened fishes of the west. Great Basin Naturalist Memoirs, 3:41-64.
41. Paulson, L.J., J.R. Baker and J.E. Deacon. 1979. The fate of biogenic suspensoids in a desert reservoir. In Swanson, G. A. Tech. Coordinator. The mitigation symposium. General technical report Am-65. Rocky Mtn. Forest and Range Exp. Sta., Fort Collins, Colorado.
42. Courtenay, W.R. and J.E. Deacon. 1982. Status of introduced fishes in certain spring systems in southern Nevada. Great Basin Naturalist, 42(3):361-366.
43. Priscu, J.E., J. Verduin and J.E. Deacon. 1982. Primary productivity and nutrient balance in a lower Colorado River reservoir. Arch. Hydrobiol., 94(1):1-23.
44. Greger, P. and J.E. Deacon. 1982. Observations on woundfin spawning and growth in an outdoor experimental stream. Great Basin Nat., 42(4):549-552.
45. Courtenay, W.R. and J.E. Deacon. 1983. Fish introductions in

- the American southwest: a case history of Rogers Spring, Nevada. *Southwestern Naturalist*, 28(2):221-224.
46. Baugh, T.M. and J.E. Deacon. 1983. Daily and yearly movement of the Devil's Hole pupfish, *Cyprinodon diabolis* Wales in Devil's Hole, Nevada. *Great Basin Naturalist*, 43(4):592-596.
  47. Baugh, T.M. and J.E. Deacon. 1983. Maintaining the Devil's Hole pupfish, *Cyprinodon diabolis* Wales in aquaria. *Jour. Aquariculture and Aquatic Sciences*, 3(4):73-75.
  48. Deacon, J.E. and T.B. Hardy. 1984. Stream flow requirements of woundfin (*Plagopterus argentissimus*) Cyprinidae in the Virgin River: Utah, Arizona, Nevada. pp. 45-56. In: N. V. Horner (ed.) Festschrift for Walter W. Dalquest in honor of his sixty-sixth birthday. *Midwestern Univ. Press*.
  49. Deacon, J.E. and J.E. Williams. 1984. Annotated list of the fishes of Nevada. *Proc. Biol. Soc. Wash.*, 97(1):103-118.
  50. Courtenay, W.R., J.E. Deacon, D.W. Sada, R.C. Allen and G. Vinyard. 1985. Comparative status of fishes along the course of the pluvial White River, Nevada. *Southwest Nat.*, 30(4):503-524.
  51. Baugh, T.M., J.E. Deacon and D. Withers. 1985. Conservation efforts with the Hiko White River springfish, *Crenichthys baileyi grandis*. *Jour. Aquariculture and Aquatic Sciences*, 4(3):49-53.
  52. Williams, J.E. and J.E. Deacon. 1986. Subspecific identity of the Amargosa pupfish, *Cyprinodon nevadensis*, from Crystal Spring, Ash Meadows, Nevada. *Great Basin Naturalist*, 46(2):220-223.
  53. Baugh, T.M., J.W. Pedretti and J.E. Deacon. 1986. Status and distribution of the Fish Creek Springs tui chub. *Great Basin Naturalist*, 46(3):441-444.
  54. Baugh, T.M., J.E. Williams, D.A. Buck and J.E. Deacon. 1986. New distributional records for *Cyprinodon nevadensis mionectes*, an endangered pupfish from Ash Meadows, Nevada. *Southwestern Naturalist*, 31(4):544-546.
  55. Temple, S.A. M.W. Collopy and J.E. Deacon. 1986. Endangered species: Role of university-based research. *Trans. 51st N.A. Wildl. and Nat. Res. Conf.*, pp. 562-566.
  56. Greger, P.D. and J.E. Deacon. 1987. Diel food utilization by woundfin, *Plagopterus argentissimus*, in Virgin River, Arizona. *Environmental Biology of Fishes*, 19(1):73-77.

57. Heckmann, R.A., P.D. Greger and J.E. Deacon. 1987. New host records for the Asian fish tapeworm, *Bothriocephalus acheilognathi*, in endangered fish species from the Virgin River, Utah, Nevada and Arizona. *Journal of Parasitology*, 73(1):226-227.
58. Heckmann, R.A., J.E. Deacon and P.D. Greger. 1987. Parasites of the woundfin minnow, *Plagopterus argentissemus*, and other endemic fishes from the Virgin River, Utah. *Great Basin Naturalist*, 46(4):662-676.
59. Tippe, D. and J.E. Deacon. 1987. The influence of the convict cichlid on growth and reproduction of White River springfish. *Proc. Desert Fishes Council*, 18:201-204.
60. Courtenay, W.R., C.R. Robins, R.M. Bailey and J.E. Deacon. 1988. Records of exotic fishes from Idaho and Wyoming. *Great Basin Naturalist*, 47(4):523-526 (1987).
61. Deacon, J.E., P.B. Schumann and E.L. Stuenkel. 1988. Thermal tolerances and preferences of fishes of the Virgin River system (Utah, Arizona, Nevada). *Great Basin Naturalist*, 47(4):538-546 (1987).
62. Deacon, J.E. 1988. The endangered woundfin and water management in the Virgin River, Utah, Arizona, Nevada. *Fisheries*, 13(1):18-24.
63. Baugh, T.M., J.E. Deacon and P. Fitzpatrick. 1988. Reproduction and growth of the Pahrump poolfish, (*Empetrichthys latos latos*) in the laboratory and in nature. *J. Aquaculture and Aquatic Sciences*, 5(1):1-5.
64. Greger, P.D. and J.E. Deacon. 1988. Food partitioning among fishes of the Virgin River. *Copeia*, 1988(2):314-323.
65. Pedretti, J.W., T.M. Baugh and J.E. Deacon. 1988. Status of native fishes in Big Smokey Valley, Nevada. *J. of the Arizona-Nevada Academy of Science*, 22(2):117-121 (1987).
66. Taylor, F.R., R.R. Miller, J.W. Pedretti and J.E. Deacon. 1988. Rediscovery of the Shosone pupfish at Shoshone Springs, Inyo County, California. *Bull. So. Calif. Academy of Science*, 87(2):67-73.
67. Baugh, T.M. and J.E. Deacon. 1989. Evaluation of the role of refugia in conservation efforts for the Devil's Hole pupfish. *Zoo Biology*, 7:351-358 (1988).
68. Williams, J.E., J.E. Johnson, D.A. Hendrickson, S. Contreras-Balderas, J.D. Williams, M. Navarro-Mendoza, D.E. Miller and J.E. Deacon. 1990. *Fishes of North America: Endangered*,

- Threatened, or of Special Concern. 1989. Fisheries 14(6):2-20 (1989).
69. Minckley, W.L. and J.E. Deacon, eds. 1991. Battle Against Extinction: Native Fish Management in the American West. Univ. of Arizona Press, Tucson. 517 pp.
  70. Deacon, J. E. and C. D. Williams. 1991. Ash Meadows and the Legacy of the Devils Hole Pupfish. chapter 5, pp. 69-87. in Minckley, W. L. and J. E. Deacon (eds). 1991. Battle Against Extinction: Native Fish Management in the American West. The University of Arizona Press. Tucson.
  71. Williams, C. D. and J. E. Deacon. 1991. Ethics, Federal Legislation, and Litigation in the Battle Against Extinction. chapter 7, pp. 109-121. in Minckley, W. L. and J. E. Deacon (eds). 1991. Battle Against Extinction: Native Fish Management in the American West. The University of Arizona Press. Tucson.
  72. Deacon, J. E. and W. L. Minckley. 1991. Western Fishes and the Real World: The Enigma of "Endangered Species" Revisited. chapter 20, pp. 405-413. in Minckley, W. L. and J. E. Deacon (eds). 1991. Battle Against Extinction: Native Fish Management in the American West. The University of Arizona Press. Tucson.
  73. Bozek, M. A., L. J. Paulson, G. R. Wilde, and J. E. Deacon. 1991. Spawning season of the Razorback sucker, Xyrauchen texanus in Lake Mojave, Arizona and Nevada. J. of Freshwater Ecology. 6(1):61-73.
  74. Tippe, D., J. E. Deacon, and Chih-Hwong Ho. 1991. Effects of Convict Cichlids on growth and Recruitment of White River springfish. Great Basin Naturalist. 51(3): 256-260.
  75. Gregory, Scott C. and J. E. Deacon. 1994. Human Induced Changes to Native Fishes in the Virgin River Drainage. pp. 435-444. in Marston, R. A. and Hasfurther, V. R. (eds). 1994. Effects of Human-Induced Changes on Hydrologic Systems. Proceedings Annual Summer Symposium of the American Water Resources Association. Jackson Hole, Wyoming.
  76. Deacon, J. E., Frances R. Taylor and John W. Pedretti. 1995. Egg Viability and Ecology of Devils Hole Pupfish: Insights from Captive Propagation. The Southwestern Naturalist. 40(2):216-223
  77. Deacon, J. E. and Frances R. Taylor. 1995. Diel Oxygen Variation and Hatching Success of Devils Hole Pupfish: An Hypothesis. Proceedings of the Desert Fishes Council. 26:33 (Abstract)

78. Andersen, M. E. and J. E. Deacon. 1996. Status of Endemic Non-Salmonid Fishes in Eastern Nevada. *Journal of the Arizona/Nevada Academy of Science*. 29:124-133
79. Minckley, W. L., J. E. Deacon, P. C. Marsh, W. J. Matthews, and P. B. Moyle. 1997. Sustainability of Western Native Fish Resources. *Aquatic Ecosystems Symposium: A Report to the Western Water Policy Review Advisory Commission*. pp. 63 - 74. 17 February, 1997.
80. Williams, Cindy Deacon, and James E. Deacon. 1998. Recommendations for a Comprehensive Virgin River Watershed and Native Fishes Conservation Program. *Briefing Book*. Pacific Rivers Council. Pp 1- 51.
81. Andersen, M. E. and J. E. Deacon. 2001. Population Size of Devils Hole Pupfish (*Cyprinodon diabolis*) Correlates with Water Level. *Copeia* 2001(1):224-228.
82. Lenon, N., K. Stave, T. Burke, and J. Deacon. 2002. Bonytail (*Gila elegans*) may enhance survival of Razorback suckers (*Xyrauchen texanus*) in rearing ponds by preying on exotic crayfish. *Journal of the Arizona Nevada Academy of Sciences*. 34(1):46-52.
83. Deacon, J.E. and C.D. Williams. 2002. A Conservation Strategy for the Virgin River Watershed. Pp. 283-322. *In* Ma. de Lourdes Lozano-Vilano (ed). 2002. *Libro Jubilar en Honor al Dr. Salvador Contreras Balderas*. Universidad Autonoma de Nuevo Leon. Monterrey, Mexico.
84. Minckley, W., P. Marsh, J. Deacon, T. Dowling, P. Hedrick, W. Matthews, and G. Mueller. 2003. A Conservation Plan for Lower Colorado River Native Fishes. *Bioscience* 53(3):219-234.
85. Riggs, A. C., and J. E. Deacon. 2004. CONNECTIVITY IN DESERT AQUATIC ECOSYSTEMS:THE DEVILS HOLE STORY. *In*: Sada, D.W., and Sharpe, S.E. (eds). 2004. *Conference Proceedings, Spring-fed Wetlands: Important Scientific and Cultural Resources of the Intermountain Region, May 7-9, 2002, Las Vegas, NV*. DHS Publication No. 41210. Retrieved (date) from Desert Research Institute web site: <http://www.wetlands.dri.edu>
86. Holden, P., M. Golden, and J. Deacon. 2005. Historical changes in fishes of the Virgin-Moapa River system: Continuing decline of a unique native fauna. Pp. 99-114. *In* Rinne, J.N, R.M. Hughes, and R. Calamusso. *Historical Changes in Large River Fish Assemblages of the Americas*. American Fisheries Society Symposium 45.
87. Pedretti, J. W., T. Baugh, and J. E. Deacon. MS submitted.

Captive Reproduction of Devils Hole Pupfish: Reflection and Prognosis. Southwestern Naturalist.

88. Deacon J. E., A. Williams, C. D. Williams, and J. E. Williams. In prep. Largescale Groundwater Withdrawal and Potential Impacts to Endangered Aquatic Species in the Great Basin.

**Interpretive Articles:**

- 1978 Devil's Hole pupfish, victim of environmental damage. Mainstream. 9(3):24-25.
- 1983 The most endangered pupfish. Freshwater and Marine Aquarium, 6(6)L22-26, 78-79 (with T.M. Baugh).
- 1984 Seasons of the blackwater ponds. Freshwater and Marine Aquarium, 7(8):22-24, 62 (with T.M. Baugh).
- 1984 From this leaf... Freshwater and Marine Aquarium, 7(10):8-12 (with T.M. Baugh).
- 1984 The ocean lawn. Freshwater and marine Aquarium, 7(10):8-12 (with T.M. Baugh).
- 1984 Day and night on a coral reef. Freshwater and Marine Aquarium, 7(11)L34-37 (with T.M. Baugh).
- 1985 The natural history of Caribbean coral reefs. pp. 1-75m (with Phyllis cathy).
- 1987 Diving the Devil's Hole. Underwater Naturalist, 16(2):6-7 (with T.M. Baugh)
- 1987 Diving the Mangrove Swamp. Underwater naturalist, 16(3):12-14 (with T.M. Baugh and Jeannie Masters).

**Theses Directed: status of student post masters indicated by ( ):**

- 1968 Spawning periodicity and fecundity of Crenichthys balileyi, a fish endemic to Nevada. F.A. Espinosa, Jr. (Fisheries Biologist, U.S. Forest Service).
- 1968 Some ecological and taxonomic consideration of Death Valley Cyprinodonts. James Francis LaBounty (Ph.D., Arizona State University; Research Scientist, U.S. Bureau of Reclamation, Denver, CO).
- 1969 Habitat preference, responses to environment and activity patterns of lizards at Saratoga Springs, Death Valley National Monument, California. Fenton R. Kay (Ph.d., New Mexico State

- University; Biological Consultant, Tucson, AZ)
- 1969 Aspects of the ecology of the Devil's Hole pupfish. Carol James (businesswoman, Las Vegas, NV).
- 1971 Life history studies of the Virgin River spinedace. William Rinne (Chief environmental officer, U.S. Bureau of Reclamation, Boulder City, NV).
- 1972 Age and growth observations on the largemouth bass, Micropterus salmoides (Lacepede) in Lake Mead. C.O. Minckley (USFWS, Parker, AZ).
- 1975 Ecological distribution of the fishes of the Virgin River (Utah, Arizona, Nevada). Jeffrey Cross (Ph.D., University of Washington; Research Scientist, Southern California Coastal Water Resources Project, Long Beach, CA).
- 1975 Seasonal and spatial variation in primary productivity in Boulder Basin, Lake Mead, Clark County, Nevada. Isamu Aoki (Environmental Scientist, EG&G).
- 1977 Benthic macroinvertebrates of lower Lake Mead. Susan SmSm Melancon (Ph.D. in progress, University of Nevada, Reno, NV).
- 1977 Responses of the woundfin, Plagopterus argentissimus, to natural saline waters. Jack Williams (Ph.D., 1981, Oregon State University; (Program Manager for Fisheries, USBCM, Washington, DC)
- 1977 Life history and thermal responses of empetrichthys latos, the Pahrump killifish. Douglas Selby (Ph.D., 1983, Utah State University; Engineer, Las Vegas Valley Water District, Las Vegas, NV).
- 1977 Zooplankton and metalimnetic oxygen depletion in Lake Mead. Tom Burke (Aquatic Biologist, U.S. Bureau of Reclamation, Boulder City, NV).
- 1978 Primary productivity in Lake Mojave. John Priscu (Ph.D., 1982, University of California, Davis; Professor, Montana State University, Bozeman, MT).
- 1978 Thermal relations of the Virgin River roundtail, Gila robusta seminuda. Paul Schumann (Ph.D. University of California, Los Angeles; Environmental Scientist, U.S. Environmental Protection Agency, Los Alamos, NM).
- 1982 Instream flow requirements of the fishes of the outflow of Ash Springs. Thomas B. Hardy (Ph.D., Utah State University; Assistant Professor, Utah State University, Logan, UT).

- 1983 Foods of largemouth bass in the Atchafalaya Basin. Linda Blakey (homemaker, Reno, NV).
- 1983 Foods of fishes in the Virgin River. Paul Greger (Biologist, UCLA, Nevada Test Site).
- 1985 Social behavior of the Devil's Hole pupfish. Thomas M. Baugh (Biologist, Endangered Species Office, U.S. Fish and Wildlife Service, Jacksonville, FL).
- 1986 Community metabolism in the outflow of Ash Spring, Pahranaagat Valley. Nadine R. Kanim (Biologist, U.S. Fish and Wildlife Service, Sacramento, CA).
- 1997 Relationship of Water Level to Population Size of Devils Hole Pupfish (*Cyprinodon diabolis*). Matthew Andersen (Biologist, Dames and Moore, Las Vegas, NV).
- 1998 Distribution of Larval Devils Hole Pupfish, *Cyprinodon diabolis* Wales, in Relation to Dissolved Oxygen Concentration in Devil's Hole. Eric Gustafson (Biology teacher, Chapparel High School, Las Vegas, NV).
- 1998 Recreational Disturbance of a Desert Stream Fish Community: Detecting Ecological Effects of Environmental Impact. Johnny Mark Sappington

**Awards and Recognitions:**

- 1955-56 Who's Who in Biology, Undergraduate
- 1956 Who's Who in American Colleges and Universities
- 1960 NSF Summer Institute, Virginia Institute of Marine Sciences
- 1963-64 RISSECA Award for Outstanding Contributions to Human Relations in Science
- 1967 Certified as a fisheries scientist by the American Fisheries Society
- 1967 Selected as a fellow of the American Association for the Advancement of Science
- 1970 Wildlife Conservationist Award. Presented by the Nevada Wildlife Federation and the National Wildlife Federation for outstanding contribution to the wise use and management of the nation's natural resources.
- 1975 Elected Fellow, American Institute of Fishery Research Biologists

- 1979 Elected Fellow, Arizona-Nevada Academy of Science
- 1979 Special Internal Resolution of Commendation, American Fisheries Society (the first such recognition ever given by the AFS)
- 1982-83 Barrick Distinguished Scholar, UNLV
- 1984 Prof. R. R. Miller (University of Michigan), one of the nations most distinguished ichthyologists, described a new fish species from southern Nevada, naming it *Rhinichthys deaconi*.
- 1985 UNLV nominee for the Phi Kappa Phi National Scholar Award
- 1987 Distinguished Faculty Award, UNLV Alumni Association
- 1987 Award of Excellence, California/Nevada Chapter American Fisheries Society
- 1988 Distinguished Professor, UNLV
- 1988 Certificate of Special Recognition, The Nature Conservancy
- 1990 Trustees Award from the Nevada State Department of Museums and History for contributions to the conservation of Nevada's natural resources.
- 1994 UNLV Commencement Speaker
- 1995 Certificate of Recognition, Las Vegas Indian Center
- 2001 Selected by Nevada chapter of The Nature Conservancy as their "Hero" as a part of the 50th anniversary celebration for The Nature Conservancy

**Invited Presentations of Professional Papers:**

- 1966 Ecology of Saratoga Springs, Death Valley National Monument. Symposium on research in the national parks. AIBS Annual Meetings, College Park, MD.
- 1968 Endangered fishes of the western United States. Western section of the American Fisheries Society, Reno, NV.
- 1968 Endangered fishes and fisheries management. Symposium on ichthyology and fisheries management. American Fisheries Society, Tucson, AZ.

- 1968 Marshes, mice and men on the Mojave Desert. National Assn. of Biology Teachers. Annual meeting of the western division. Las Vegas, NV.
- 1969 The endangered species view. Symposium of problems of exotic fishes and other aquatic organisms. Sponsored jointly by American Fisheries Society and American Society of Ichthyologists and Herpetologists. Washington, DC.
- 1969 Population dynamics of a warm spring fish population. Faculty of Population and Environmental Biology, University of California, Irvine.
- 1969 Where should science be taking society? National Science Teachers Assn., Silver Science Symposium.
- 1970 A preliminary ecosystem model of Saratoga Springs. Western Division AAAS Meeting, Berkeley, CA.
- 1970 Can biologists and natural resource managers communicate effectively? Discussion chairman, second AIBS interdisciplinary workshop, Laramie, WY.
- 1971 Rearing bait fishes in the desert southwest. Inland Commercial Fisheries Workshop, Laramie, WY.
- 1974 Devil's Hole pupfish. Desert Fishes Council Annual Meeting, Las Vegas, NV.
- 1975 Devil's Hole: A case in point. American Fisheries Society National Meeting.
- 1975 The limnology of Lake Mead in relation to plans for pump storage. U.S. Bureau of Reclamation workshop on ecology of pumped storage reservoirs, Denver, CO.
- 1977 Research on endangered fishes in the national parks with special emphasis on the Devil's Hole pupfish. *Plenary address*, aquatic ecology section, first annual symposium on research in national parks, New Orleans, LA.
- 1978 Endangered fishes of North America. Fisheries administrators Section, American Fisheries Society, Huntington, WV. (May)
- 1978 Endangered fishes of western North American. BYU symposium on endangered plants and animals. (December)
- 1979 Long and short term changes in western North American fishes populations. Faculty/student seminar, Oregon State University. (April)

- 1979 Ecology and population biology of desert fishes. Annual Biology Symposium, University of California, Fullerton. (November)
- 1980 Endangered species and faith in our future. Natural resource days, Colorado State University. (April)
- 1981 Biogeographical relationships of Cyprinodontid fishes of southwestern U.S. Faculty/student seminar, University of Texas, Austin. (February)
- 1981 Endangered fishes...who cares? Faculty/student seminar, Midwestern University, Wichita Falls, TX. (February)
- 1981 Cyprinodontid biogeography in southwestern U.S. Faculty/student seminar, Sacramento State University. (October)
- 1986 Endangered southwestern fishes. Faculty/student seminar, Brigham Young University. (January)
- 1986 Status of the Devil's Hole pupfish. Cal State Long Beach Biology Colloquium I: Recovery of rare and endangered species. (February-March)
- 1991 Environment at Risk - Green Choices. Nevada Public Health Assoc. Annual Meeting, Sept. 19, 1991. Holiday Hotel, Las Vegas.
- 1991 Pupfish, People and Posterity in Death Valley. 75th Anniversary Celebration of the National Park Service. October 12, 1991. Death Valley, Ca.

In addition, numerous presentations were made as contributed papers at annual meetings of scientific societies (1-4 per year from about 1966-1986)

**Other Professional Activities:**

1. Wrote Nevada Fish and Game Commission Policy Number 16: Endemic Endangered Fishes, January 14, 1967.
2. Lecturer, Summer Institute of Desert Biology, Arizona State University, 1968-70.
3. Chairman (1975-77) and founding member (1969-present) of the Desert Fishes Council, the primary conservation organization dedicated to the preservation of desert fishes and therefore responsible for much public and scientific input to government agencies relative to conservation efforts on endemic desert fishes.
4. Sabbatical leave - 1970, 1983.
5. Assisted in planning and appeared with other scientists and

- Jack Lemmon in, "Timetable for Disaster," an NBC documentary, one hour in length, 1970. (Emmy Award for outstanding documentary of the year.
6. Assisted in preparing "Death Valley, the Land and the Legend," National Geographic, PBS TV, Spring, 1970.
  7. Assisted in the Bill Burred Animal World ABC-TV program, "Animals of Death Valley," 1971.
  8. IPB Modeling Group for construction of a generalized model of aquatic ecosystems in the desert, 1971-73.
  9. President, Environmental Consultants, Inc., 1972-86; Chairman, Board of Directors, 1977-86.
  10. Endangered species committee chairman. A committee of the American Fisheries Society, 1972-79.
  11. Liaison/representative for Ecological society of America to Bureau of Sport Fisheries and Wildlife for matters concerning endangered species, 1973-75.
  12. Obtained the first federal funding for establishment of a refuge for endemic fish. Refuge funded by Fish and Wildlife, constructed by Nevada Fish and Game at Hot Creek, White River Valley, Nevada, for White River springfish, *Crenichthys baileyi*.
  13. Referee, American Society of Ichthyologists and Herpetologists, American Fisheries Society and numerous other scientific periodicals.
  14. Provided the crucial testimony in the Devil's Hole pupfish case. Testimony was based on extended studies made by me and my students which provided information on factors controlling population size. This permitted the court to establish guidelines for management of water levels compatible with survival of the species. The Supreme Court decision that the fish had a prior right to enough water to insure their survival rested heavily on my testimony relative to the mechanisms of population control in this species. Efforts to explain the significance of this case and its meaning in the broader context of developing a "conservation ethic" continues. For example, in November, 1976, I appeared on local television with a rancher, (Tim Hafen) from Pahrump Valley to discuss the implications of the Supreme Court decision. I was also invited to present the Plenary Address in Aquatic Biology at the First Annual Symposium on research in the national parks in New Orleans, November, 1976. The address emphasized the significance of scientific knowledge to both administrative and judicial decision making. Another U.S. District Court hearing to set the final water level for Devil's Hole according to the guidelines established the U.S. Supreme Court was held in November, 1976. I was the expert witness at that time, also.
  15. Consultant to Time-Life Books for their volume on Sagebrush Desert.
  16. Consultant to national Geographic Society for their volume on Endangered Wildlife.
  17. Assisted Stanton Films with production of an educational

- movie, "The Desert Pupfish."
18. Produced and wrote narrative for 35 mm colored slide presentations for Harper and Row Publishing Company on The Galapagos Islands and Baja California.
  19. Workshop on understanding and obtaining federal grants, June, 1978.
  20. Seminar on faculty evaluation and development, February, 1979.
  21. Research administration training session offered by the National Council of University Research Administrators, November, 1979.
  22. Chautauqua course, Life in the Oceans, University of Texas, 1980-81.
  23. Sabbatical leave - 1983.
  24. Consultant to BBC for television series, "The Making of a Continent," 1983.
  25. Consultant to BBC for television program "Resurrection at Truk lagoon," 1984.
  26. Chautauqua course, Tropical Marine Ecology, University of Puerto Rico, April, 1985.
  27. Taught summer short course offered through International College of the Cayman Islands, "Natural History of Coral Reefs," July, 1984, 1985.
  28. Endangered species recovery teams organized by the U.S. Fish and Wildlife Service:
    - a. Warm Springs Pupfish Recovery Team, 1975-80
    - b. Woundfin Recovery Team, 1978- 1990
    - c. Devil's Hole Pupfish Recovery Team, 1978-82, 1991-present
    - d. Eastern Mojave Desert Endangered Fishes Recovery Team, 1982-present
    - e. Virgin River Fishes Recovery Team, 1990-present
  29. Wrote species workbooks, (literature review and current state of knowledge, 1985-86) for the U.S. Fish and Wildlife Service centralized data base known as the Endangered Species Information System, covering the following species:
    - a. Moapa dace
    - b. Pahranaagat speckled dace
    - c. Ash Meadows speckled dace
    - d. Pahrump poolfish
    - e. Devil's Hole pupfish
    - f. Ash Meadows pupfish
    - g. Warm Springs pupfish
  30. Expert witness for State of Nevada in Yucca Mountain Water Rights Hearing, 1991.
  31. Consultant to U. S. National Park Service, Bureau of Land Management, Fish and Wildlife Service, and Bureau of Indian Affairs for evaluation of probable impacts of the proposed Las Vegas Valley Water District projects to obtain water from the Virgin River and eastern and central Nevada. 1992-95.
  32. Consultant to U. S. National Park Service for water rights litigation/negotiation for Zion National Park. 1993-1996.

### Courses Taught

1. Humans and the Environment
2. Human Ecology
3. Ichthyology
4. Vertebrate Zoology
5. Comparative Vertebrate Anatomy
6. Biology of Man
7. Human Anatomy & Physiology
8. Comparative Vertebrate Embryology
9. Herpetology
10. General Physiology
11. Mammalogy
12. Aquatic Ecology
13. Advanced Ichthyology
14. Limnology
15. Fish Hatchery Management Techniques
16. Ecology of Fishes
17. Natural History of Baja California
18. Natural History of the Galapagos, Andes & Amazon
19. Principles of Modern Biology
20. Biology of Oceanic Islands
21. Fisheries Biology
22. Marine Biology
23. Natural History of Coral Reefs
24. Life in the Oceans
25. Seminar in Environmental Studies